CLAIMS

We claim:

1. A method for delivering substance into skin via an abrader device comprising the steps of:

positioning the abrader device at a delivery site on the skin of a patient; and

applying a substance to the skin of a patient at the delivery site by mechanically rotating the protrusions of the abrader device against the skin with sufficient force to disrupt and substantially penetrate the stratum corneum of the skin.

2. The method according to claim 1, wherein the mechanical rotation of the protrusions forms an abraded area that increases the permeability of the skin to the substance and permits transfer of the substance through the abraded area into the skin.

3. The method according to claim 1, further comprising the step of providing a housing that surrounds the mechanically rotating protrusions, where the housing, which remains stationary during the rotation of the protrusions, keeps the skin of a patient, at the delivery site, taunt.

4. The method according to claim 1, further comprising the step of monitoring the force with which the protrusions on the abrader device is applied against the skin.

5. The method according to claim 3, wherein the housing holds the patient's skin at the delivery site in place as the protrusions of the abrader device are rotated against the skin to be treated.

6. The method according to claim 1, wherein the protrusions are microprotrusions and an array of microprotrusions are mechanically rotated.

7. The method according to claim 6, wherein the microprotrusions are frustoconical protrusions with at least one scraping edge.

8. The method according to claim 1, wherein the substance is applied on the skin of the patient at the delivery site before the abrader device is positioned at the delivery site.

9. The method according to claim 1, wherein the substance is applied on the skin of the patient at the delivery site simultaneously as the abrader device is positioned at the delivery site.

10. The method according to claim 1, wherein the substance if pre-applied or coated on the protrusions before the abrader device is mechanically rotated.

11. The method according to claim 6, wherein the rotation of the array of microprotrusions forms circular furrows, and some of the furrows intersect other furrows thereby increasing the amount of surface area through which the substance can be absorbed.

12. A rotary delivery device comprising:

a housing having a top end with an opening and a bottom end adapted to be placed against a patient's skin;

an interlock mechanism disposed adjacent said housing; and

an abrader chip with an array of protrusions protruding therefrom, said abrader chip being coupled to said interlock mechanism that holds said abrader chip stationary until deactivated;

wherein when said bottom end of said housing is against a patient's skin and said interlock mechanism is deactivated, said abrader chip is rotated against the patient's skin.

13. The rotary device according to claim 12, wherein said interlock mechanism includes a button protruding through the opening, said button being coupled to a longitudinally moveable rod; and a spring surrounding said longitudinally moveable rod within said housing,

and wherein said abrader chip is coupled to an end of said longitudinally moveable rod so that said spring holds said abrader chip stationary until said button is activated thereby deactivating said interlock mechanism.

14. The rotary device according to claim 13, further comprising a freely rotatable sleeve mounted within said housing, said sleeve having an end face to which said abrader chip may be attached and having threads with which the end of said longitudinally moveable rod connects so that a force applied to said button causes said longitudinally moveable rod to move along the threads of said sleeve thereby rotating said abrader chip.

15. The rotary device according to claim 12, further comprising means for retracting said abrader chip inside said housing.

16. The rotary device according to claim 14, further comprising means for retracting said abrader chip inside said housing, said means for retracting said abrader chip including a cushion layer surrounding said longitudinally moveable rod.

17. The rotary device according to claim 12, further comprising means for controlling the amount of force or pressure applied against a patient's skin.

18. The rotary device according to claim 17, wherein said means for controlling the amount of force or pressure is a preloaded spring that will deflect only if the sufficient amount of pressure is present, the preloaded spring when released from its compressed state slightly retracts said abrader chip within said housing.

19. The rotary device according to claim 17, wherein said means for controlling the amount of force is a detent that projects from said button slightly above the top end of said housing before said button is pushed through the opening.

20. The rotary device according to claim 17, wherein said means for controlling the

amount of force is a printed matter gauge.

21. The rotary device according to claim 12, wherein said abrader chip is a microabrader device having an abrading surface formed with an array of microprotrusions.

22. The rotary device according to claim 15, further comprising means for permanently retracting said abrader chip inside said housing.

23. A method for delivering substance into skin via a microabrader device comprising the steps of:

positioning the microabrader device at a delivery site on the skin of a patient, said microabrader device having a support and a plurality of microprotrusions coupled to the support where each of said microprotrusions having at least one scraping edge and a length to abrade the stratum corneum; and

rotating the microabrader device against the skin at the delivery site with sufficient force so that the plurality of microprotrusions disrupt and penetrate the stratum corneum substantially without piercing the stratum corneum thereby allowing a substance to be delivered into the skin of a patient at the delivery site.

24. The method according to claim 23, wherein the rotating step is accomplished by manually rotating a microabrader device against a patient's skin so that the microabrader devices moves laterally while being rotating thereby abrading a larger skin area.

25. The method according to claim 23, wherein the rotating step is accomplished by mechanically rotating the microabrader device.

26. The method according to claim 25, wherein the rotating step abrades a localized area of skin thereby increasing the resultant efficiency of drug or vaccine delivery.